

Appendix A: Data Sources and Technical Notes

Data Sources

The following are sources for data analyzed for the report. Public Health – Seattle & King County is responsible for all analyses and results.

King County and Washington State

1. Behavioral Risk Factor Surveillance System: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention; Washington State Department of Health Center for Health Statistics; and Public Health – Seattle & King County.
2. Births, deaths and hospitalizations: Washington State Department of Health, Center for Health Statistics
3. Cancer registry: Washington State Department of Health, Center for Health Statistics
4. Communicable Disease data: Washington State Department of Health, Communicable Disease Epidemiology.
5. HIV/AIDS data: HIV/AIDS Epidemiology Unit, Public Health – Seattle & King County, and Infectious Diseases and Reproductive Health Assessment Unit, Washington State Department of Health.
6. Population estimates: Washington State Department of Health, Vista Partnership, Krupski Consulting: Washington State Population Estimates for Public Health. October 2004.
7. STD data: Washington State Department of Health, STD/TB Services.
8. U.S. Census Bureau, American Community Survey (do we want a separate notation for the demographics from the 2000 Census, not just the ACS)
9. Washington State Healthy Youth Survey: Washington State Department of Health
10. SMILE survey: Washington State Department of Health and Public Health – Seattle & King County
11. State Population Survey (for the childhood insurance bullet)
12. Ann? Disability data

U. S.

1. Behavioral Risk Factor Surveillance System Survey: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention.
2. Births and deaths: U.S. National Center for Health Statistics, public use data file.
3. Healthy People 2010: U.S. Office of Disease Promotion and Health Prevention, U.S. Department of Health and Human Services
4. U.S. Census Bureau, American Community Survey

Technical Notes

Data Interpretation

Crude, Age-Specific, and Age-Adjusted Rate: a rate in this report is usually expressed as the number of events per 100,000 population per year. When this applies to the total population (all ages), the rate is called *the crude rate*. When the rate applies to a specific age group (e.g. age 15-24), it is called *the age-specific rate*. Crude and age-specific rates present the actual magnitude of an event within a population or age group.

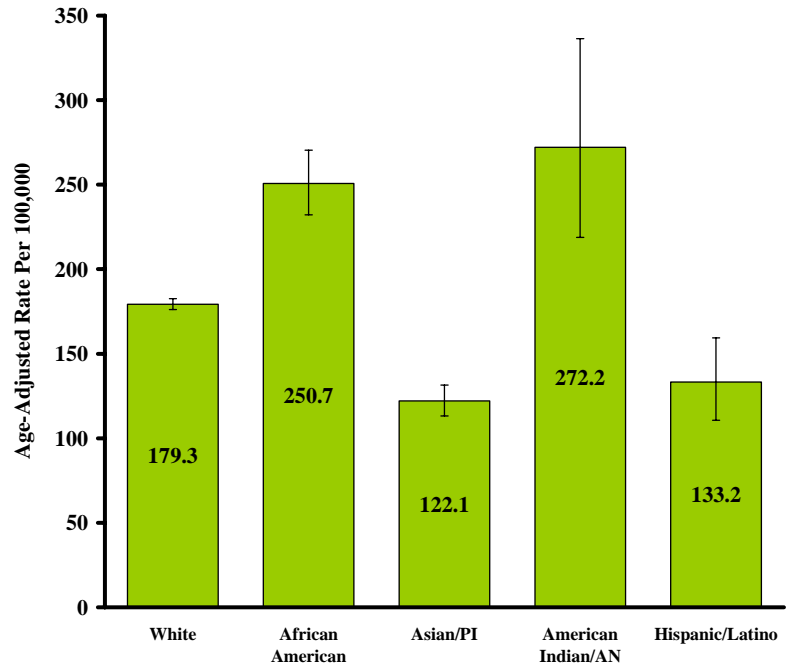
When comparing rates between populations, it is useful to calculate a rate which is not affected by differences in the age composition of the populations. For example, if one population has a higher death rate and more older people, it will not be easy to determine if the rate is truly higher or just reflects the high death rate among older people. *The age-adjusted rate* is a rate that mathematically removes the effect of the age composition. By convention, the rate is often adjusted to the age distribution of the 2000 U.S. population. In this report, when comparisons are made between two or more population of all ages such as gender, racial/ethnic groups, and geographic areas, age-adjusted rates are used.

Confidence Interval: When comparing rates between different groups in King County with bar graphs, the "95% confidence interval" or margin of error is given for each rate to assess how much the rate is likely to vary due to chance. For each estimated rate, one would expect the rate to fluctuate, but to remain within the confidence interval 95% of the time. The larger the population, the smaller the confidence interval, and thus the more reliable the rate. When comparing two rates, if the confidence intervals do not overlap, the difference between the two rates is considered "statistically significant", that is, chance or random variation can be ruled out as the reason for the difference.

The following graph is an example which shows the age-adjusted death rate and 95% confidence intervals for heart disease by race/ethnicity in King County.

The heart disease death rate for American Indians/Alaska Natives (AI/AN) appears to be higher than the rate for African Americans (AA). However, since the higher end of the confidence interval for AA is greater than the lower end of the confidence interval for AI/AN, their confidence intervals overlap. Therefore the difference between the two rates is not statistically significant. The confidence intervals for AA and AI/AN, however, do not overlap with the intervals for the other three racial/ethnic groups. As a result, we can state that the heart disease death rate for AA and AI/AN are significantly higher than the rates for the other three groups.

Confidence Interval Example: Heart Disease Rate in King County by Race/Ethnicity, 2001-2003 Average



Source: Washington State Department of Health, Center for Health Statistics, Death Certificates
Produced by: Public Health - Seattle & King County, Epidemiology, Planning, and Evaluation, 3/05

Tests for Time Trends: The probability that a trend over time is simply due to random variation is calculated using objective statistical tests. If the probability that a trend is due to random variation is less than 5% (i.e., $p < 0.05$), a trend is considered statistically significant. (For rates, the test for trend is found in the following citation: Mantel N. Chi-square tests with one degree of freedom; extensions of the Mantel-Haenzel procedure. *J Am Stat Assoc.* 1963; 58(303): 690-700. For percents from surveys, trend over time is assessed with the `svylogit` command in Stata (StataCorp. 2003. *Stata Statistical Software*: Release 8.0. College Station, TX. Stata Corporation.))

Rolling Averages: For populations of small size, small changes in the number of events will cause the rate to fluctuate substantially. To help stabilize the rate and observe the time trend of an event, rates are sometimes aggregated into "rolled" averages, such as in 3 or 5 year intervals, across the total observed period. For example, if there is a highly fluctuating rate caused by low numbers of events for years 2000 through 2004, the rates are instead reported as three-year rolling averages: 2000-2002, 2001-2003, and 2002-2004.

Race/Ethnicity: Race/ethnicity is a marker for complex social, economic and political factors that are important influences on community and individual health. Differences in rates of most diseases and injuries are not due to biological or genetic factors. Many

people of color in the U.S. have experienced social and economic discrimination, and other forms of racism, which can negatively affect their health. We examine and present data by race/ethnicity because we believe that it is important to understand which racial/ethnic groups are disproportionately affected by significant health issues. We hope this understanding will lead to strategies that address these issues, as well as the social and economic inequities which underlie them. Analyses by race are presented by single-race categories to allow trend over time comparisons, using data before and after the 2000 U.S. Census.

Annual Household Income: For data with annual household income at the individual level, such as the BRFSS data, we examined the data by annual household income levels: less than \$15,000, \$15,000 to \$24,999, \$25,000 to \$34,999, \$35,000 to \$49,999, and \$50,000 and over. We also converted these income categories to Federal Poverty Levels based on income and size of the households.

Neighborhood Poverty Level: For health outcomes for which individual income was not available, health outcomes were divided into high-, medium- and low-poverty neighborhoods based on the census tract or ZIP code in which the person lived. To construct these neighborhoods, all King County census tracts or ZIP codes were first ranked by the percentage of population living below the Federal Poverty Level in 1999. Tracts and ZIP codes were then divided into groups with similar poverty levels. Census tracts were divided into three groups in which 20% or more, 5% to 19%, and less than 5% of the population were living below poverty. The analogous poverty ranges in ZIP-code-based groupings were 15% or more, 5% to 15% and less than 5% of the population living below poverty. Health events were assigned to one of these groups based on the census tract or ZIP code of residence, and the tracts or ZIPs in each group were aggregated together for the analysis. These groups are labeled as “high poverty”, “medium poverty”, and “low poverty” neighborhoods in this report.

Geographical Definitions

Regions and Health Planning Areas: In addition to examining data for King County, we also analyzed the data by Region and by Health Planning Area (HPA) used by Public Health – Seattle & King County. In 2005, Public Health created revised HPA boundaries to be as consistent as possible with current and anticipated suburban city boundaries. For Seattle, HPAs were created in consultation with the City of Seattle’s Department of Neighborhoods. For the most precise HPAs, block groups were aggregated to create 34 new HPAs. ZIP code-based HPAs are used where health outcomes by block group are not available and they differ somewhat from the block group-based HPAs in terms of boundary and population size. There are 25 ZIP-based HPAs.

While we attempted to create both sets of HPAs to be as similar as possible, boundary discrepancies are present and in some cases block-group-based HPAs were combined to better fit ZIP-code-based HPA boundaries. Notable differences between the ZIP and the census areas occur in the North Seattle area, where North Seattle, Northwest Seattle and Shoreline HPAs are combined into North Seattle/Shoreline. Other HPAs that are combined in Seattle include West Seattle and Delridge, Beacon Hill-

Georgetown-South Park and Southeast Seattle, Ballard and Fremont-Greenlake, and Capitol Hill and Eastlake. In South Region, Des Moines/Normandy Park, and Cascade-Fairwood and Covington-Maple Valley are combined into ZIP code-based HPAs. The White Center/Boulevard Park as defined by zip code covers some of Burien and SeaTac. The Auburn area is increased and SE County is smaller. Tukwila/SeaTac covers a smaller area. In East county, Lower Valley and Upper Snoqualmie are combined into a single HPA as defined by zip code. Also, the Riverview- Lower Valley- Upper Snoqualmie has one zip code (98077) that crosses into Snohomish County. A detailed map is available upon request.

On the following pages, the first table shows the year 2000 population for the ZIP code-based HPAs and the block group-based HPAs. The next two tables show the full names of both sets of HPAs and the abbreviations for them used in this report.

ZIP code-based	Population	Block group-based	Population
Auburn	61623	Auburn	57541
Ball-Fremt-Greenlk	90560	Ballard	44241
		Fremont/Greenlake	40718
Beacon & SE Seattle	62825	Beacon/G'town/S.Park	35053
		SE Seattle	43230
Bellevue	121645	Bellevue	124769
Bothell/Woodinville	75094	Bothell/North Shore	48615
Burien/Des Moines	50337	Burien	34390
		Des Moines/Normandy Pk	34954
Capitol Hill/Eastlake	40271	Capitol Hill	40714
Cascade & Covington	58912	Cascade-Fairwood	39064
		Covington/Maple Valley	39666
Downtown & Central Seattle	84046	Central Seattle	38471
		Downtown/First Hill	36778
Federal Way	116214	Federal Way	113159
Issaquah/Sammamish	51901	Issaquah/Sammamish	71517
Kent	137745	Kent	111945
Kirkland	70883	Kirkland	79604
Lower Valley & Upper Sno	38144	Riverview/Lower Valley	51898
		Upper Snoqualmie Valley	20971
Mercer Isle/Point Cities	24814	Mercer Isle/Pt Cities	29983
N. Seattle/Shoreline	135254	North Seattle	40390
		Shoreline	51416
		NW Seattle	40781
NE Seattle	82650	NE Seattle	70695
Queen Anne/Magnolia	54796	Queen Anne/Magnolia	53601
Redmond/Union Hill	82103	Redmond/Union Hill	60887
Renton	99136	Renton	77313
Southeast King County	27975	SE County	44181
Tukwila/SeaTac	30509	Tukwila/SeaTac	42024
Vashon Island	9978	Vashon Island	10136
W. Seattle/Delridge	76785	W Seattle	47700
		Delridge	31016
White Center/Boulevard Pk	55972	White Center/Boulvd Pk	29609

Health Planning Areas by Block Group (in alphabetical order by abbreviation)

Abbreviation	Full HPA Name
Auburn	Auburn
Ballard	Ballard
Beacon/G'town/S.Park	Beacon Hill-Georgetown-South Park
Bellevue	Bellevue
Bothell-North Shore	Bothell-North Shore
Burien	Burien
Cap. Hill-Eastlake	Capitol Hill-Eastlake
Cascade-Fairwood	Cascade-Fairwood
Central Seattle	Central Seattle
Covington-Maple Valley	Covington-Maple Valley
Delridge	Delridge
Des Moines-Normandy Pk	Des Moines-Normandy Park
Downtown/First Hill	Downtown/First Hill
Federal Way	Federal Way
Fremont/Greenlake	Fremont/Greenlake
Issaquah/Sammamish	Issaquah/Sammamish
Kent	Kent
Kirkland	Kirkland
Mercer Isle/Pt Cities	Mercer Island/Point Cities (Yarrow Bay, Hunts Point)
NE Seattle	Northeast Seattle
North Seattle	North Seattle
NW Seattle	Northwest Seattle
Queen Anne/Magnolia	Queen Anne/Magnolia
Redmond/Union Hill	Redmond/Union Hill
Renton	Renton
Riverview/Lower Valley	Riverview/Lower Valley
SE County	Southeast County
SE Seattle	Southeast Seattle
Shoreline	Shoreline
Tukwila/SeaTac	Tukwila/SeaTac
Upper Snoqualmie Valley	Upper Snoqualmie Valley
Vashon Island	Vashon Island
W Seattle	West Seattle
White Center/Blvd Pk	White Center/Boulevard Park

Health Planning Areas by Zip Code (in alphabetical order by abbreviation)

Abbreviation	Full HPA Name
Auburn	Auburn
Ball-Fremt-Greenlk	Ballard-Fremont-Greenlake
Beacon/SE Seattle	Beacon Hill-Georgetown-South Park-Southeast Seattle
Bellevue	Bellevue
Bothell/Woodinville	Bothell-North Shore-Woodinville
Burien/Des Moines	Burien-Des Moines-Normandy Park
Capitol Hill/Eastlake	Capitol Hill-Eastlake
Cascade/Covington	Cascade-Fairwood-Covington-Maple Valley
Downtown/Central	Downtown-Central Seattle
Federal Way	Federal Way
Issaquah/Sammamish	Issaquah/Sammamish
Kent	Kent
Kirkland	Kirkland
Lower Valley/Upper Sno	Lower Valley-Riverview-Upper Snoqualmie
Mercer Isle/Point Cities	Mercer Island-Point Cities (Yarrow Bay, Hunts Point)
N. Seattle/Shoreline	North Seattle-Shoreline
NE Seattle	Northeast Seattle
Queen Anne/Magnolia	Queen Anne-Magnolia
Redmond/Union Hill	Redmond-Union Hill
Renton	Renton
Southeast King County	Southeast King County
Tukwila/SeaTac	Tukwila-Sea Tac
Vashon Island	Vashon Island
W. Seattle/Delridge	West Seattle-Delridge
White Center/Bldv Pk	White Center-Boulevard Park